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PTO/SB/21 (08-00)

Approved for use through 10/31/2002. OMB 0651-0031
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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

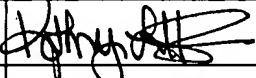
Total Number of Pages in This Submission

| | |
|------------------------|-------------------|
| Application Number | 10/814,752 |
| Filing Date | 03/31/2004 |
| First Named Inventor | Paul L. DeAngelis |
| Group Art Unit | 1653 |
| Examiner Name | Not Yet Assigned |
| Attorney Docket Number | 4599.014 |

ENCLOSURES (check all that apply)

| | | |
|---|---|--|
| <input checked="" type="checkbox"/> Fee Transmittal Form | <input type="checkbox"/> Assignment Papers (for an Application) | <input type="checkbox"/> After Allowance Communication to Group |
| <input type="checkbox"/> Fee Attached | <input type="checkbox"/> Drawing(s) | <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences |
| <input type="checkbox"/> Amendment / Reply | <input type="checkbox"/> Licensing-related Papers | <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) |
| <input type="checkbox"/> After Final | <input type="checkbox"/> Petition | <input type="checkbox"/> Proprietary Information |
| <input type="checkbox"/> Affidavits/declaration(s) | <input type="checkbox"/> Petition to Convert to a Provisional Application | <input type="checkbox"/> Status Letter |
| <input type="checkbox"/> Extension of Time Request | <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address | <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): |
| <input type="checkbox"/> Express Abandonment Request | <input type="checkbox"/> Terminal Disclaimer | See remarks below: |
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| <input type="checkbox"/> Certified Copy of Priority Document(s) | <input type="checkbox"/> CD, Number of CD(s) _____ | |
| <input type="checkbox"/> Response to Missing Parts/ Incomplete Application | | |
| <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53 | | |
| Remarks | | |
| 1. Transmittal Form (1 page); 2. Fee Transmittal (1 page); 3. Information Disclosure Statement (3 pages); 4. Information Disclosure Statement by Applicant (formerly Form 1449) (7 pages); 5. Cited Material; and 6. Postcard. | | |

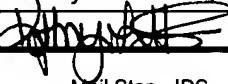
SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

| | | |
|-------------------------|--|--|
| Firm or Individual name | DUNLAP, CODDING & ROGERS, P.C., Customer Number 30589 Attn.: Kathryn L. Hester, Ph.D., P. O. Box 16370, Oklahoma City, Oklahoma 73113 | |
| Signature |  | |
| Date | 11-30-04 | |

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for FY 2005

Patent fees are subject to annual revision.

Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT **(\$)** **0**

Complete if Known

| | |
|----------------------|------------------|
| Application Number | 10/814.752 |
| Filing Date | 03/31/2004 |
| First Named Inventor | Paul DeAngelis |
| Examiner Name | Not Yet Assigned |
| Art Unit | 1653 |
| Attorney Docket No. | 4599.014 |

METHOD OF PAYMENT (check all that apply)

Check Credit card Money Order Other None

Deposit Account:

Deposit Account Number
Deposit Account Name

The Commissioner is authorized to: (check all that apply)
 Charge fee(s) indicated below Credit any overpayments
 Charge any additional fee(s) during the pendency of this application
 Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

| Large Entity | Small Entity | Fee Code (\$) | Fee Code (\$) | Fee Description | Fee Paid |
|---------------------|--------------|----------------------|---------------|------------------------|----------|
| 1001 790 | 2001 395 | | | Utility filing fee | |
| 1002 350 | 2002 175 | | | Design filing fee | |
| 1003 550 | 2003 275 | | | Plant filing fee | |
| 1004 790 | 2004 395 | | | Reissue filing fee | |
| 1005 160 | 2005 80 | | | Provisional filing fee | |
| SUBTOTAL (1) | | (\$) 0 | | | |

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

| Total Claims | Independent Claims | Multiple Dependent | Extra Claims | Fee from below | Fee Paid |
|--------------|--------------------|--------------------|--------------|----------------|----------|
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| Large Entity | Small Entity | Fee Description |
|---------------------|--------------|--|
| 1202 18 | 2202 9 | Claims in excess of 20 |
| 1201 88 | 2201 44 | Independent claims in excess of 3 |
| 1203 300 | 2203 150 | Multiple dependent claim, if not paid |
| 1204 88 | 2204 44 | ** Reissue independent claims over original patent |
| 1205 18 | 2205 9 | ** Reissue claims in excess of 20 and over original patent |
| SUBTOTAL (2) | | (\$) 0 |

**or number previously paid, if greater; For Reissues, see above

3. ADDITIONAL FEES

| Large Entity | Small Entity | Fee Description | Fee Paid |
|---------------------------|--------------|--|----------|
| 1051 130 | 2051 65 | Surcharge - late filing fee or oath | |
| 1052 50 | 2052 25 | Surcharge - late provisional filing fee or cover sheet | |
| 1053 130 | 1053 130 | Non-English specification | |
| 1812 2,520 | 1812 2,520 | For filing a request for ex parte reexamination | |
| 1804 920* | 1804 920* | Requesting publication of SIR prior to Examiner action | |
| 1805 1,840* | 1805 1,840* | Requesting publication of SIR after Examiner action | |
| 1251 110 | 2251 55 | Extension for reply within first month | |
| 1252 430 | 2252 215 | Extension for reply within second month | |
| 1253 980 | 2253 490 | Extension for reply within third month | |
| 1254 1,530 | 2254 765 | Extension for reply within fourth month | |
| 1255 2,080 | 2255 1,040 | Extension for reply within fifth month | |
| 1401 340 | 2401 170 | Notice of Appeal | |
| 1402 340 | 2402 170 | Filing a brief in support of an appeal | |
| 1403 300 | 2403 150 | Request for oral hearing | |
| 1451 1,510 | 1451 1,510 | Petition to institute a public use proceeding | |
| 1452 110 | 2452 55 | Petition to revive - unavoidable | |
| 1453 1,370 | 2453 685 | Petition to revive - unintentional | |
| 1501 1,370 | 2501 685 | Utility issue fee (or reissue) | |
| 1502 490 | 2502 245 | Design issue fee | |
| 1503 660 | 2503 330 | Plant issue fee | |
| 1460 130 | 1460 130 | Petitions to the Commissioner | |
| 1807 50 | 1807 50 | Processing fee under 37 CFR 1.17(q) | |
| 1806 180 | 1806 180 | Submission of Information Disclosure Stmt | |
| 8021 40 | 8021 40 | Recording each patent assignment per property (times number of properties) | |
| 1809 790 | 2809 395 | Filing a submission after final rejection (37 CFR 1.129(a)) | |
| 1810 790 | 2810 395 | For each additional invention to be examined (37 CFR 1.129(b)) | |
| 1801 790 | 2801 395 | Request for Continued Examination (RCE) | |
| 1802 900 | 1802 900 | Request for expedited examination of a design application | |
| Other fee (specify) _____ | | | |

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) **(\$)** **0**

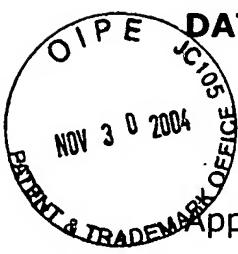
(Complete if applicable)

| | | | | |
|-------------------|--------------------------|-----------------------------------|--------|--------------------------|
| Name (Print/Type) | Kathryn L. Hester, Ph.D. | Registration No. (Attorney/Agent) | 46,768 | Telephone (405) 607-8600 |
| Signature | | | Date | 11/30/2004 |

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EXPRESS MAIL NO.: EV 373446199 US
DATE DEPOSITED: NOVEMBER 30, 2004

PATENT



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Paul DeAngelis) Atty. Dkt. No. 4599.014
Serial No.: 10/814,752)
Filed: March 31, 2004)

For: HEPARIN/HEPAROSAN SYNTHASE FROM P. MULTOCIDA, SOLUBLE AND
SINGLE ACTION CATALYSTS THEREOF AND METHODS OF MAKING AND
USING SAME

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P.O. Box 1450, Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

**List Of Sections Forming Part Of This
Information Disclosure Statement**

The following sections are being submitted for this Information Disclosure Statement:

1. Preliminary Statements
2. Form PTO/SB/08A And 08B (formerly Form PTO-1449)
3. Copies Of Listed Information Items Accompanying This Statement
4. Identification Of Person(s) Making This Information Disclosure Statement

Section 1. Preliminary Statements

Applicants submit herewith patents, publications or other information of which they are aware, which they believe may be material to the examination of this application and in respect of which there may be a duty to disclose.

The filing of this information disclosure statement shall not be construed as a representation that a search has been made (37 C.F.R. § 1.97(g)), an admission that the information cited is, or is considered to be, material to patentability or that no other material information exists.

The filing of this information disclosure statement shall not be construed as an admission against interest in any manner. Notice of January 9, 1992, 1135 O.G. 13-25, at 25.

Section 2. Form PTO/SB/08A And 08B (Modified)

A completed Form PTO/SB/08A and/or 08B is attached hereto.

No Form PTO/SB/08A and/or 08B is attached.

Section 4. Copies Of Listed Information Items Accompanying This Statement

Legible copies of all items listed in Form PTO/SB/08A And 08B (Modified) accompany this information disclosure statement.

As this application is being filed after June 30, 2003, no copies of cited U.S. patents or patent application publications are submitted herewith.

Section 5. Identification Of Person(s) Making This Information Disclosure Statement

The person making this statement is the attorney/agent who signs below on the basis of the information:

- supplied by the inventor(s)
- supplied by an individual associated with the filing and prosecution of this application (37 C.F.R. § 1.56(c)).
- in the attorney/agent's file

Respectfully submitted,



Kathryn L. Hester, Ph.D.
Reg. No. 46,768
DUNLAP, CODDING & ROGERS, P.C.
P.O. Box 16370
Oklahoma City, Oklahoma 73118
Telephone - (405) 607-8600
Facsimile - (405) 607-8686

Agent for Applicant



| | | | | | |
|--|---|----|---|------------------------------------|------------------|
| <p>Substitute for form 1449A/PTO</p> <p>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</p> <p><i>(use as many sheets as necessary)</i></p> | | | | <p>Complete if Known</p> | |
| | | | | <p>Application Number</p> | 10/814,752 |
| | | | | <p>Filing Date</p> | 03/31/2004 |
| | | | | <p>First Named Inventor</p> | Paul DeAngelis |
| | | | | <p>Group Art Unit</p> | 1653 |
| | | | | <p>Examiner Name</p> | Not Yet Assigned |
| Sheet | 1 | of | 7 | <p>Attorney Docket Number</p> | |
| <p>4599.014</p> | | | | | |

U.S. PATENT DOCUMENTS

FOREIGN PATENT DOCUMENTS

| | | | |
|-----------------------|--|--------------------|--|
| Examiner Signature | | Date Considered | |
|-----------------------|--|--------------------|--|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

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| Substitute for form 1449B/PTO | | | | Complete if Known | |
| INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i> | | | | Application Number | 10/814,752 |
| | | | | Filing Date | 03/31/2004 |
| | | | | First Named Inventor | Paul DeAngelis |
| | | | | Group Art Unit | 1653 |
| | | | | Examiner Name | Not Yet Assigned |
| Sheet 2 of 7 | | | | Attorney Docket Number | 4599.014 |

| OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS | | |
|--|-----------------------|---|
| Examiner Initials* | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. |
| | AA | VANN, W.F., et al.: The Structure of the Capsular Polysaccharide (K5 Antigen) of Urinary-Tract-Infective Escherichia coli 010:K5:H4. Biochem J. 116:359-364 (1981). |
| | AB | FAREED, J.: Heparin, Its Fractions, Fragments and Derivatives. Some Newer Perspectives. Seminars in Thrombosis and Hemostasis. 11(1):1-9 (1985). |
| | AC | ROBERTS, I., et al.: Molecular Cloning and Analysis of Genes for Production of K5, K7, K12, and K92 Capsular Polysaccharides in Escherichia coli. J. Bacteriology. 168(3):1228-1233 (1986). |
| | AD | ROBERTS, I.S., et al.: Common Organization of Gene Clusters for Production of Different Capsular Polysaccharides (K Antigens) in Escherichia coli. J. Bacteriology. 170(3):1305-1310 (1988). |
| | AE | KRONCKE, K.D., et al.: Expression of the Escherichia coli K5 Capsular Antigen: Immunoelectron Microscopic and Biochemical Studies with Recombinant E. coli. J. Bacteriology. 172(2):1085-1091 (1990). |
| | AF | SMITH, A.N., et al.: Molecular analysis of the Escherichia coli K5 kps locus: identification and characterization of an inner-membrane capsular polysaccharide transport system. Molecular Microbiology. 4(11):1863-1869 (1990). |
| | AG | KUSCHE, M., et al.: Biosynthesis of heparin. Use of Escherichia coli K5 capsular polysaccharide as a model substrate in enzymic polymer-modification reactions. Biochem J. 275(pt1):151-8 (1991). |
| | AH | SOLDANI, G., et al.: Experimental and Clinical Pharmacology of Glycosaminoglycans (GAGs). Drugs Exptl. Clin. Res. XVII(1):81-85 (1991). |
| | AI | LIDHOLT, K., et al.: Biosynthesis of heparin. The D-glucuronosyl- and N-acetyl-D-glucosaminyltransferase reactions and their relation to polymer modification. Biochem J. 287(pt 1):21-9 (1992). |
| | AJ | BRONNER, D., et al.: Synthesis of the K5 (group II) capsular polysaccharide in transport-deficient recombinant Escherichia coli. FEMS Microbiology Letters 113:279-284 (1993). |
| | AL | LIND, T., et al.: Biosynthesis of Heparin/Heparan Sulfate. The Journal of Biological Chemistry. 268(28):20705-20708 (1993). |

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| Examiner Signature | | Date Considered |
|--------------------|--|-----------------|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² Applicant is to place a check mark here if English language Translation is attached.

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| (use as many sheets as necessary) | | | | Filing Date | 03/31/2004 |
| | | | | First Named Inventor | Paul DeAngelis |
| | | | | Group Art Unit | 1653 |
| | | | | Examiner Name | Not Yet Assigned |
| Sheet | 3 | of | 7 | Attorney Docket Number | 4599.014 |

| OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS | | |
|--|-----------------------|---|
| Examiner Initials ¹ | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. |
| | AM | PANDIT, K.K., et al.: Capsular hyaluronic acid in <i>Pasteurella multocida</i> type A and its counterpart in type D. <i>Research in Veterinary Science</i> . 54:20-24 (1993). |
| | AN | CASU, B., et al.: Heparin-like compounds prepared by chemical modification of capsular polysaccharide from <i>E. coli</i> . <i>Elsevier Science</i> . 263:271-284 (1994). |
| | AO | LIDHOLT, K., et al.: Substrate specificities of glycosyltransferases involved in formation of heparin precursor and <i>E. Coli</i> K5 capsular polysaccharides. <i>Carbohydrate Research</i> . 255:87-101 (1994). |
| | AP | RIMLER, R.B.: Presumptive Identification of <i>Pasteurella multocida</i> serogroups A, D and F by capsule depolymerisation with mucopolysaccharidases. <i>Veterinary Record</i> . 134:191-192 (1994). |
| | AC | AHN, J., et al.: Cloning of the putative tumor suppressor gene for hereditary multiple exostoses (EXT1). <i>Nat. Genet.</i> 11(2):137-43 (1995). |
| | AR | PETIT, C., et al.: Region 2 of the <i>Escherichia coli</i> K5 capsule gene cluster encoding proteins for the biosynthesis of the K5 polysaccharide. <i>Molecular Microbiology</i> . 17(4):611-620 (1995). |
| | AS | RAZI, N., et al.: Structural and functional properties of heparin analogues obtained by chemical sulphation of <i>Escherichia coli</i> K5 capsular polysaccharide. <i>Biochem J.</i> 309 (pt2):465-72 (1995). |
| | AT | RIMLER, R.B., et al.: Influence of chondroitinase on direct hemagglutination titers and phagocytosis of <i>Pasteurella multocida</i> serogroups A, D and F. <i>Veterinary Microbiology</i> . 47:287-294 (1995). |
| | AU | STICKENS, D., et al.: The EXT2 multiple exostoses gene defines a family of putative tumor suppressor genes. <i>Nat. Genet.</i> 14(1):25-32 (1996). |
| | AV | CLINES, G.A., et al.: The Structure of the Human Multiple Exostoses 2 Gene and Characterization of Homologs in Mouse and <i>Caenorhabditis elegans</i> . <i>Cold Spring Harbor Laboratory Press</i> . 7:359-367 (1997). |
| | AW | WISE, C.A., et al.: Identification and Localization of the Gene for EXT1, a Third Member of the Multiple Exostoses Gene Family. <i>Cold Spring Harbor Laboratory Press</i> . 7:10-16 (1997). |

| | | |
|--------------------|--|-----------------|
| Examiner Signature | | Date Considered |
|--------------------|--|-----------------|

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| INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i> | | | | Application Number | 10/814,752 |
| Sheet | 4 | of | 7 | Filing Date | 03/31/2004 |
| | | | | First Named Inventor | Paul DeAngelis |
| | | | | Group Art Unit | 1653 |
| | | | | Examiner Name | Not Yet Assigned |
| | | | | Attorney Docket Number | 4599.014 |

| OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS | | |
|---|-----------------------|--|
| Examiner Initials* | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. |
| | AX | WYATT TECHNOLOGY CORPORATION: Heparin Characterization. 4/5; www.tgc.org. |
| | AY | GRIFFITHS, G., et al.: Characterization of the Glycosyltransferase Enzyme from the Escherichia coli K5 Capsule Gene Cluster and Identification and Charaterization of the Glucuronyl Active Site. The Journal of Biological Chemistry, 273(19):11752-11757 (1998). |
| | AZ | LIN, X., et al.: Expression and functional analysis of mouse EXT1, a homolog exostoses type 1 gene. Biochem Biophys Res Commun.; 248(3):738-43 (1998). |
| | BA | LIND, T., et al.: The Putative Tumor Suppressors EXT1 and EXT2 Are Glycosyltransferases Required for the Biosynthesis of Heparan Sulfate. The Journal of Biological Chemistry, 273(41):26265-26268 (1998). |
| | BB | McCORMICK, C., et al.: The putative tumor suppressor EXT1 alters the expression of cell-surface heparan sulfate. Nat. Genet. 19(2):158-61 (1998). |
| | BC | RIGG, G.P., et al.: The localization of KpsC, S and T, and KfA, C and D Proteins Involved in the biosynthesis of the Escherichia coli K5 capsular polysaccharide: evidence for a membrane-bound complex. Microbiology 144, 2905-2914 (1998). |
| | BD | VAN HUL, W., et al.: Identification of a Third EXT-like Gene (EXTL3) Belonging to the EXT Gene Family. Genomics. 47(2):230-7 (1998). |
| | BE | FINKE, A., et al.: Biosynthesis of the Escherichia coli K5 Polysaccharide, a Representative of Group II Polysaccharides: Polymerization In Vitro and Characterization of the Product. Journal of Bacteriology. 4088-4094 (1999). |
| | BF | KITAGAWA, H., et al.: The Tumor Suppressor EXT-like Gene EXTL2 Encodes an 1, 4-N-Acetylhexosaminyltransferase That Transfers N-Acetylgalactosamine and N-Acetylglucosamine to the Common Glycosaminoglycan-Protein Linkage Region. The Journal of Biological Chemistry. 273(20):13933- □ |
| | BG | LINHARDT, R.J., et al.: Production and Chemical Processing of Low Molecular Weight Heparins. Thieme Medical Publishers, Inc. 25(3):5-16 (1999). |
| | BH | NADER, H.B., et al.: New insights on the specificity of heparin and heparan sulfate lyases from Flavobacterium heparinum revealed by the use of synthetic derivatives of K5 polysaccharide from E. coli and 2-O-desulfated heparin. Glycoconj J. 16(6):265-70 (1999). |

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| | | | | | |
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| | | | | Examiner Name | Not Yet Assigned |
| Sheet | 5 | of | 7 | Attorney Docket Number | 4599.014 |

| OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS | | |
|--|-----------------------|--|
| Examiner Initials ¹ | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. |
| | BI | SIMMONS, A.D., et al.: A director interaction between EXT proteins and glycosyltransferases is defective in hereditary multiple exostoses. <i>Hum. Mol. Genet.</i> ; 8(12):2155-64 (1999). |
| | BJ | SONG, G., et al.: Identification of mutations in the human EXT1 and EXT2 genes. <i>Chin J. Med. Genet.</i> , 16(4):208-10 (1999). |
| | BK | BOYCE, J.D., et al.: <i>Pasteurella multocida</i> capsule: composition, function and genetics. <i>Journal of Biotechnology</i> 83:153-160 (2000). |
| | BL | HAGNER-McWHIRTER A., et al.: Biosynthesis of heparin/heparan sulfate: kinetic studies of the glucuronyl C5-epimerase with N-sulfated derivatives of the <i>Escherichia coli</i> K5 capsular polysaccharide as substrates. <i>Glycobiology</i> . 10(2):159-71 (2000). |
| | BM | HODSON, N., et al.: Identification That KfA, a Protein Essential for the Biosynthesis of the <i>Escherichia coli</i> K5 Capsular Polysaccharide, Is a UDP-GlcNAc Glycosyltransferase. <i>The Journal of Biological Chemistry</i> , 275(35):27311-27315 (2000). |
| | BN | LEGEAI-MALLET L., et al.: EXT 1 Gene Mutation Induces Chondrocyte Cytoskeletal Abnormalities and Defective Collagen Expression in the Exostoses. <i>J Bone Miner Res.</i> 15(8):1489-500 (2000). |
| | BO | LIN, X., et al.: Disruption of gastrulation and heparan sulfate biosynthesis in EXT1-Deficient Mice. <i>Dev. Biol.</i> 224(2):299-311 (2000). |
| | BP | McCORMICK, C., et al.: The putative tumor suppressors EXT1 And EXT2 form a stable complex that accumulates in the Golgi apparatus and catalyzes the synthesis of heparan sulfate. <i>PNAS</i> , 97(2):668-673 (2000). |
| | BQ | PEDERSEN, L.C., et al.: Heparan/Chondroitin Sulfate Biosynthesis. <i>The Journal of Biological Chemistry</i> , 275(44):34580-34585 (2000). |
| | BR | SASISEKHARAN, R., et al.: Heparin and heparan sulfate: biosynthesis, structure and function. <i>Elsevier Science, Ltd.</i> 1367-5931:626-631 (2000). |
| | BS | SENAJ, C., et al.: The EXT1/EXT2 tumor suppressors: catalytic activities and role in heparan sulfate biosynthesis. <i>EMBO Reports</i> 1(3):282-286 (2000). |

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| Substitute for form 1449B/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i> | | | | Complete if Known | | |
| Sheet | | 6 | of | 7 | Application Number | 10/814,752 |
| | | | | | Filing Date | 03/31/2004 |
| | | | | | First Named Inventor | Paul DeAngelis |
| | | | | | Group Art Unit | 1653 |
| | | | | | Examiner Name | Not Yet Assigned |
| | | | | | Attorney Docket Number | 4599 |

| OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS | | | |
|---|-----------------------|--|----------------|
| Examiner Initials* | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T ² |
| | BT | TOYODA, H., et al.: Structural Analysis of Glycosaminoglycans in Drosophila and Caenorhabditis elegans and Demonstrations That tout-velu, a Drosophila Gene Related to EXT Tumor Suppressors, Affects Heparan Sulfate in Vivo. The Journal of Biological Chemistry, 275(4):2269-2275 (2000). | |
| | BU | WEI, G., et al.: Location of the Glucuronosyltransferase Domain in the Heparan Sulfate Copolymerase EXT1 by Analysis of Chinese Hamster Ovary Cell Mutants. The Journal of Biological Chemistry, 275(36):27733-27740 (2000). | |
| | BV | BIO TIE THERAPIES; BioHeparin - Prospectus; June 2001. (Finland) | |
| | BW | CHEUNG, P.K., et al.: Etiological Point Mutations in the Hereditary Multiple Exostoses Gene EXT1: A Functional Analysis of Heparan Sulfate Polymerase Activity. Am. J. Hum. Genet. 69:55-66, (2001). | |
| | BX | DUNCAN, G., et al.: The link between heparan sulfate and hereditary bone disease: finding a function for the EXT family of putative tumor suppressor proteins. The Journal of Clinical Investigation, 108(4):511-516 (2001). | |
| | BY | KIM, B.T., et al.: Human tumor suppressor EXT gene family members EXTL1 and EXTL3 encode alpha 1,4-N-acetylglucosaminyltransferases that likely are involved in heparan sulfate/heparin biosynthesis. Proc. Natl. Acad. Sci. U.S.A. 1998(13):7176-81 (2001). | |
| | BZ | KITAGAWA, H., et al.: rib-2, a Caenorhabditis elegans Homolog of the Human Tumor Suppressor EXT Genes Encodes a Novel 1,4-N-Acetylglucosaminyltransferase Involved in the Biosynthetic Initiation and Elongation of Heparan Sulfate. The Journal of Biological Chemistry, 276(7):4834-4838 (2001). | |
| | CA | LEALI, D., et al.: Fibroblast Growth Factor-2 Antagonist Activity and Angiostatic Capacity of Sulfated Escherichia coli K5 Polysaccharide Derivatives. The Journal of Biological Chemistry, 276(41):37900-37908 (2001). | |
| | CB | MAY, B.J. et al. Complete genomic sequence of <i>Pasteurella multocida</i> , Pm70. Proc. Natl. Acad. Sci. 98(6):3460-3465 (2001). | |
| | CC | NAGGI, A., et al.: Toward a Biotechnological Heparin through Combined Chemical and Enzymatic Modification of the Escherichia coli K5 Polysaccharide. Seminars in Thrombosis and Hemostasis, 27(5):437-443 (2001). | |
| | CD | TOWNSEND, K.M. et al. Genetic organization of <i>Pasteurella multocida</i> cap loci and development of a multiplex capsular typing system. J. Clin. Microbiol. 39(3):924-929 (2001). | |

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| | | | | First Named Inventor | Paul DeAngelis |
| | | | | Group Art Unit | 1653 |
| | | | | Examiner Name | Not Yet Assigned |
| Sheet | 7 | of | 7 | Attorney Docket Number | 4599.014 |

| OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS | | |
|---|-----------------------|---|
| Examiner Initials ¹ | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. |
| | CE | VAN AKEN, H., et al.: Anticoagulation: The Present and Future. Clin. Appl. Thrombosis/Hemostasis, 7(3):195-204, (2001). |
| | CF | DeANGELIS, P.L., et al.: Identification of the capsular polysaccharides of Type D and F Pasteurella multocida as unmodified heparin and chondroitin, respectively. Carbohydrate Research 337:1547-1552 (2002). |
| | CG | DeANGELIS, P.L., et al.: Identification and Molecular Cloning of a Heparosan Synthase from Pasteurella multocida Type D. The Journal of Biological Chemistry. 277(9):7209-7213 (2002). |
| | CH | HILL, A.L., et al.: Identification of the Xenopus laevis cDNA for EXT1: A Phylogenetic Perspective. DNA Sequence, 13 (2):85-92 (2002). |
| | CI | JING, W., et al.: Structure function analysis of Pasteurella glycosaminoglycan synthesis. Glycobiology 12: abstract 188. |
| | CJ | KATADA, T., et al.: cDNA cloning and distribution of XEXT1, the Xenopus homologue of EXT1. Dev Genes Evol. 212:248-250 (2002). |
| | CK | KIM, B-T, et al.: Demonstration of a Novel Gene DEXT3 of Drosophila melanogaster as the Essential N-Acetylglucosamine Transferase in the Heparan Sulfate Biosynthesis. The Journal of Biological Chemistry, 277(16):13659-13665 (2002). |
| | CL | POGGI A., et al.: Inhibition of B16-BL6 melanoma lung colonies by semisynthetic sulfaminoheparosan sulfates from E. Coli K5 polysaccharide. Semin Thromb Hemost. 28(4):383-92 (2002). |
| | CM | SUGAHARA, K., et al.: Heparin and Heparan Sulfate Biosynthesis. Life, 54:163-175 (2002). |
| | CN | ZAK, B.M., et al.: Hereditary multiple exostoses and heparan sulfate polymerization. Biochimica et Biophysica Acta 1573:346-355 (2002). |
| | CO | VICENZI, E., et al.: Broad spectrum inhibition of HIV-1 infection by sulfated K5 Escherichia coli polysaccharide derivatives. AIDS. 17(2):177-81 (2003). |

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